



EUROPEAN MEDICINES AGENCY  
SCIENCE MEDICINES HEALTH



# Migrating EMA's workloads to Cloud

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Session IV. Sovereign cloud adoption models and their interoperability

Eu-LISA Industry Roundtable - Going to the Cloud: Why it matters for the EU public sector and how to make it work

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An agency of the European Union





**Where did your journey start and why?**

## An all-digital, modern, efficient and data-driven Agency of the future.

Becoming a **digital hub** for the European Medicines Regulatory Network providing high-quality services and enable a **connected, interoperable medicines regulatory platform** for partners and stakeholders.

Accelerating **innovation and digitalization** for better public and animal health outcomes



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## Context

- › Implementation of next generation data centre for EMA, following the **expiration of the Framework Contract under which EMA's data centres in Hamburg were provisioned (OC/EFSA/PTT/2015/01)**, in September 2023
- › The next generation, **Software Defined Data Centre** was a prerequisite to put EMA in a strong position to reach its **objective of fully migrating to the cloud** by the end of 2025 (in full alignment with its [Cloud Strategy](#)) and **accelerate digitalisation and innovation initiatives**, increasing the return on IT investments and **maximising the quality of EMA's services towards EU citizens and companies**
- › **Data Centre 2.0 delivered this vision by:**
  - enabling EMA to greatly increase its agility, speed and efficiency when experimenting and scaling new solutions, demonstrating in parallel compliance with security and data protection requirements and regulations
  - acting as an enabler in the Security Strategy Implementation Plan's Strategic objectives
  - acting as an enabler for the main drivers of the [Technology Capability Investment Plan](#) to enable the business strategies of the Network

# Key characteristics - Volumetrics



## Hard deadline

Expiring framework contract-imposed data center exit



## Service Continuity

No big bang approach allowed



## Infrastructure Magnitude

>1000 servers to move



## Business Magnitude

>120 Business Applications



## Resources planning

>30 Engineers and Architects for the core team  
> 100 people worked together during transition



## Time planning

>20 months of planning and delivering  
>22 weekends of maintenance activities to ensure minimal service disruption



## Architecture enhancements

Foster continuity during hybrid period





**What skills did you identify as missing?**

**Where were those gaps, and how did you address them?**



- **Uncharted territory for this magnitude** – Workshops with Subject Matter Experts to match our approach to EMA's needs
- **Performance for hybrid period** – Databases optimal grouping in separate containers to minimise interdependencies
- **Time constraints over weekend maintenance** – Built robust runbooks allowing for contingency, smoke tests and rollback
- **Non cloud compatible technologies** – Simplified Public key infrastructure to decommission obsolete Hardware Security Modules
- **Governance** – Strengthened observability of the entire landscape with Control Tower and Landing Zones approach

## Architectural Challenges



- **MON and HCX performance limitations imposed by VMC**
- **Direct line connectivity (latency between AWS and hosted DCs)**
- **Application interdependencies (DB links) during hybrid state**
- **Support coverage from third party vendors (Oracle RAC, SAP) on AWS VMC**
- **Cloud native technologies specifications**

Demonstrate receptiveness to change, reflect speedily on findings, maintain detailed decisions log on key aspects: Storage Account strategy, Cloud based Load Balancers / Traffic Managers Firewall, Extending backup solutions with cloud-based libraries, Promote serverless computing and automation through "Infrastructure as a Code" solutions whenever possible

## Technology challenges





- **No precedent for cloud financial management** – Analysed in depth the modularity of DIGIT's charging scheme (including broker services) and adapted cost planning accordingly. Extensive usage of available financial management tools for cost monitoring, like Cost Explorer.
  - Implementation of effective usage of Resources by utilizing Reservations plan on computing resources and spreading multi-year commitments in a layered approach to ensure
  - Establishment of mechanisms to automate power-off of resources not in use to optimise usage and regulate cost

## Cost Management Challenges



**What do you wish you knew 2 years ago when you started?**

**What would be your recommendations to EU Lisa and the industry?**

## Strong Governance

Governance is a crucial success factor



01



02

## Clear scope supported by Strategy

Clearly defined scope and strategy documents in place

## Know your landscape

Ensure you have the full insight of how your workloads work together



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04

## Team Enablement provisions

Your team needs to be enabled to drive, implement and operate



05

## Keep it simple and practical

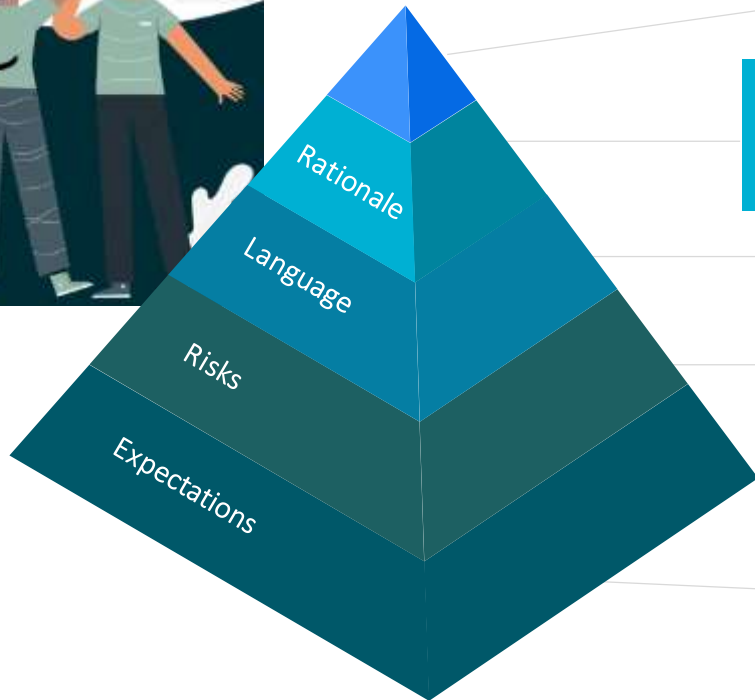
Simplicity can be more challenging to create than complexity. Processes or services that are easy to understand are more likely to be used



06

## Be ready for surprises

Have contingencies in place



## Engage stakeholders as early as possible

Don't wait until the project starts to get buy-in. Stakeholders must be engaged early in the management process

## Provide a clear rationale for the project

People don't tend to argue with logic, as long as it is comprehensively presented to them. Make sure you have clear and rational reasons for completing the project

## Speak their language

Discuss the project in terms that make sense to them, making a clear connection between the project's success and their success

## Identify and manage risks

Risks are inherent to any project. By identifying these risks early on, you are better prepared to manage them. Be clear about your risk management plan

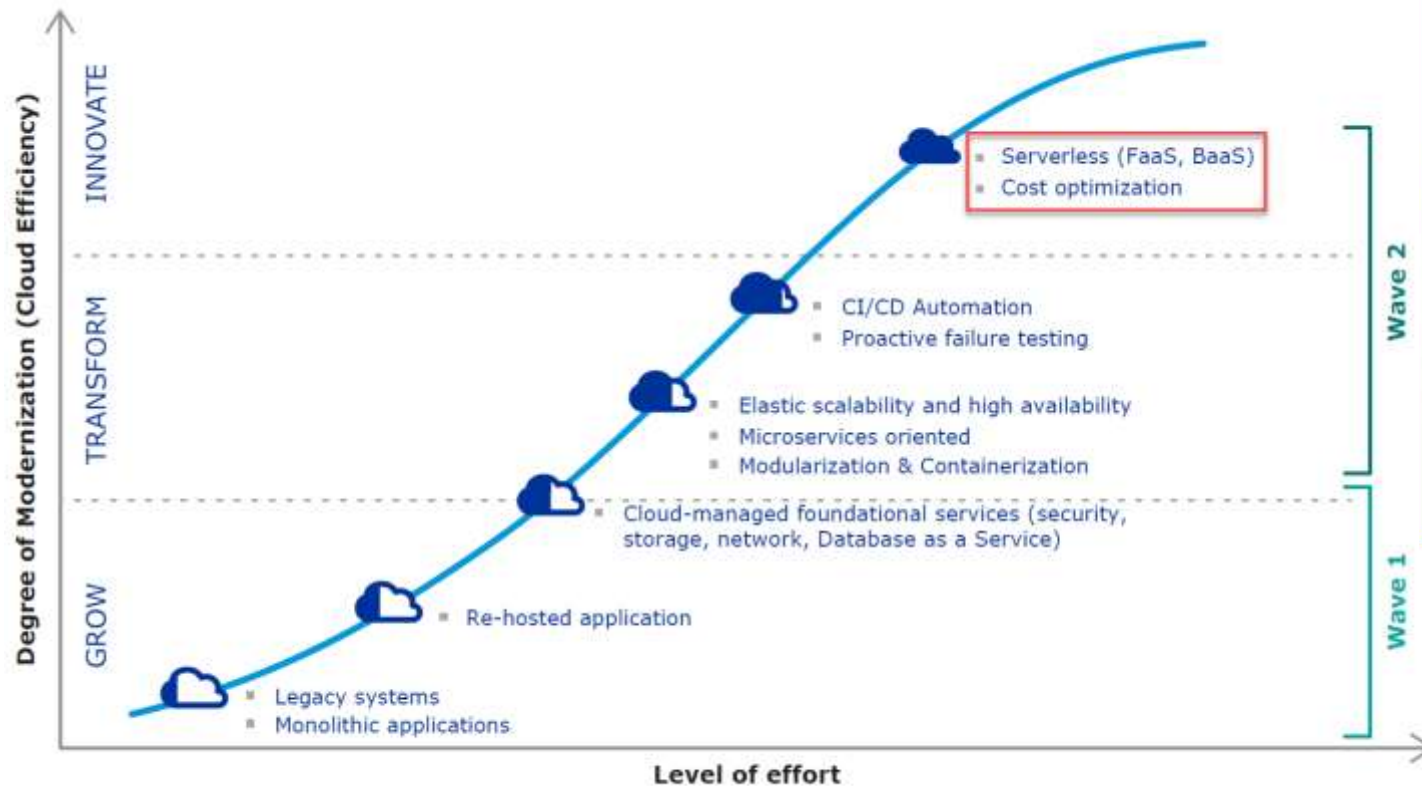
## Make expectations clear

Stakeholders are far more likely to commit to a project when they understand clearly what is expected of them, what the goals are, and how they will benefit



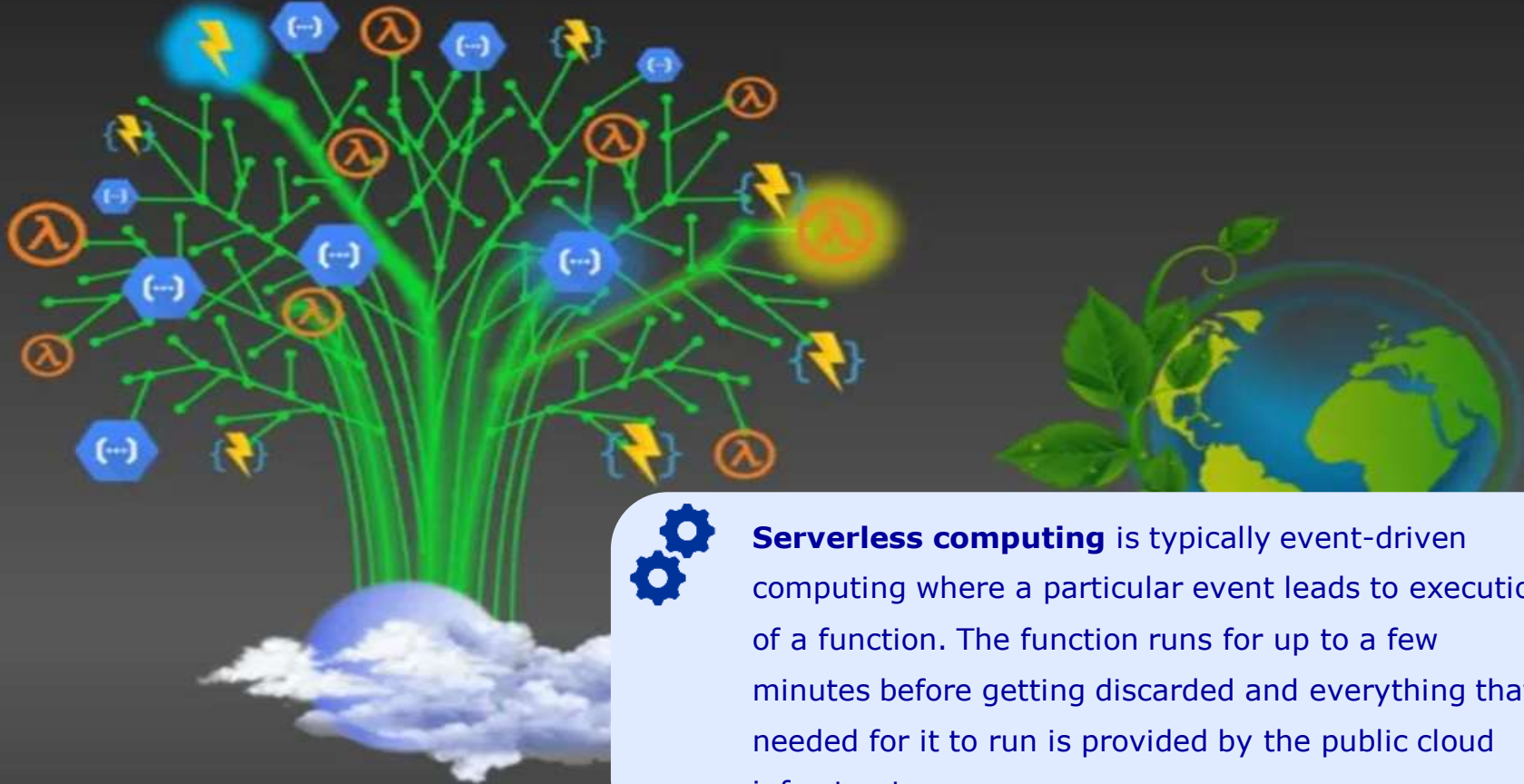
**What does the future look like for you?**

**The journey is not over, so what are the next iterations?**



**Wave 1:** Quick-wins typically addressed during migration      **Wave 2:** Full value of Cloud

# Serverless (event-driven) computing: A step toward efficient computing



**Serverless computing** is typically event-driven computing where a particular event leads to execution of a function. The function runs for up to a few minutes before getting discarded and everything that's needed for it to run is provided by the public cloud infrastructure.

